In the Claims:

Cancel, without prejudice, 1 - 35, and add new claims 36 - 73 as follows:

1. (cancelled)

2. (cancelled)

3. (cancelled)

4. (cancelled)

5. (cancelled)

6. (cancelled)

7. (cancelled)

8. (cancelled)

9. (cancelled)

10. (cancelled)

11. (cancelled)

12. (cancelled)

13. (cancelled)

14. (cancelled)

15. (cancelled)

16. (cancelled)

17. (cancelled)

18. (cancelled)

19. (cancelled)

20. (cancelled)

21. (cancelled)

22. (cancelled)

23. (cancelled)

24. (cancelled)

25. (cancelled)

26. (cancelled)

27. (cancelled)

28. (cancelled)

29. (cancelled)

30. (cancelled)

31. (cancelled)

32. (cancelled)

33. (cancelled)

34. (cancelled)

35. (cancelled)

36 (newly presented). A soft transition power converter, comprising:

a transformer having a primary winding and a secondary winding forming at least part of a power output side of the power converter;

a source of DC current and a set of switching elements electrically connecting said source to said primary winding for producing alternating current in said secondary winding;

a rectifier circuit having an alternating current input for receiving said alternating current and producing a rectified current output at said power output side of the power converter; and

a soft transition inductor electrically connecting said source and said primary winding.

37 (newly presented). The power converter of claim 36, wherein said rectifier circuit includes a bridge of rectifiers.

38 (newly presented). The power converter of claim 36, wherein said rectifier circuit includes two rectifiers and two capacitors.

39 (newly presented). The power converter of claim 36, wherein said set of switching elements comprises two pairs of controlled switching elements and a switching element controller, the switching elements of each pair being coupled together in totem pole configuration at corresponding output nodes of the pair, said pairs disposed in parallel relation across said source, the output node of one of said pairs being coupled to one end of said primary

winding and the output node of the other of said pairs coupled to the other end of said primary winding, each switching element having a control input coupled to said switching element controller, said switching element controller adapted to produce respective switching element control signals at said control inputs so as to alternately invert the voltage from said DC voltage source across said primary winding.

40 (newly presented). The power converter of claim 39, wherein said switching elements are MOSFETS each having respectively a source, a drain, and a gate, wherein said output nodes define respective connections between the source of one of said MOSFETs and the drain of another of said MOSFETs, and wherein said gates correspond respectively to said control inputs.

41 (newly presented). The power converter of claim 40, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a constant frequency mode of operation by varying the duration of said positive and negative ON times, for varying the power transferred through said transformer.

42 (newly presented). The power converter of claim 40, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by

alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a variable frequency mode of operation by varying said dead time, for varying the power transferred through said transformer.

43 (newly presented). The power converter of claim 42, wherein said source controller is adapted to cause said dead time to be at least as long in duration as at least one of said ON time and said OFF time.

44 (newly presented). The power converter of claim 36, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a constant frequency mode of operation by varying the duration of said positive and negative ON times, for varying the power transferred through said transformer.

45 (newly presented). The power converter of claim 36, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by

alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a variable frequency mode of operation by varying said dead time, for varying the power transferred through said transformer.

46 (newly presented). The power converter of claim 45, wherein said source controller is adapted to cause said dead time to be at least as long in duration as at least one of said ON time and said OFF time.

47 (newly presented). A soft transition power converter, comprising:

a transformer having a primary winding and a secondary winding forming at least part of a power output side of the power converter;

a source of DC current and a set of switching elements electrically connecting said source to said primary winding for producing alternating current in said secondary winding;

a rectifier circuit having an alternating current input for receiving said alternating current and producing a rectified current output at said power output side of the power converter; and

a first soft transition inductor electrically connecting said secondary winding and said alternating current input of said rectifier circuit.

48 (newly presented). The power converter of claim 47, wherein said rectifier circuit includes a bridge of rectifiers, and wherein said first soft transition inductor is connected between an end of said secondary winding and an input node of said bridge.

49 (newly presented). The power converter of claim 47, wherein said rectifier circuit includes two rectifiers and two capacitors.

50 (newly presented). The power converter of claim 47, wherein said set of switching elements comprises two pairs of controlled switching elements and a switching element controller, the switching elements of each pair being coupled together in totem pole configuration at corresponding output nodes of the pair, said pairs disposed in parallel relation across said source, the output node of one of said pairs being coupled to one end of said primary winding and the output node of the other of said pairs coupled to the other end of said primary winding, each switching element having a control input coupled to said switching element controller, said switching element controller adapted to produce respective switching element

control signals at said control inputs so as to alternately invert the voltage from said DC voltage source across said primary winding.

51 (newly presented). The power converter of claim 50, wherein said switching elements are MOSFETS each having respectively a source, a drain, and a gate, wherein said output nodes define respective connections between the source of one of said MOSFETs and the drain of another of said MOSFETs, and wherein said gates correspond respectively to said control inputs.

52 (newly presented). The power converter of claim 51, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a constant frequency mode of operation by varying the duration of said positive and negative ON times, for varying the power transferred through said transformer.

53 (newly presented). The power converter of claim 51, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON

time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a variable frequency mode of operation by varying said dead time, for varying the power transferred through said transformer.

54 (newly presented). The power converter of claim 53, wherein said source controller is adapted to cause said dead time to be at least as long in duration as at least one of said ON time and said OFF time.

55 (newly presented). The power converter of claim 47, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a constant frequency mode of operation by varying the duration of said positive and negative ON times, for varying the power transferred through said transformer.

56 (newly presented). The power converter of claim 47, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON

time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a variable frequency mode of operation by varying said dead time, for varying the power transferred through said transformer.

57 (newly presented). The power converter of claim 53, wherein said source controller is adapted to cause said dead time to be at least as long in duration as at least one of said ON time and said OFF time.

58 (newly presented). The power converter of claim 47, further comprising a second soft transition inductor electrically connecting said source and said primary winding.

59 (newly presented). The power converter of claim 58, wherein said rectifier circuit includes a bridge of rectifiers, and wherein said first soft transition inductor is connected between an end of said secondary winding and an input node of said bridge.

60 (newly presented). The power converter of claim 58, wherein said rectifier circuit includes two rectifiers and two capacitors.

61 (newly presented). The power converter of claim 58, wherein said set of switching elements comprises two pairs of controlled switching elements and a switching element controller, the switching elements of each pair being coupled together in totem pole configuration at corresponding output nodes of the pair, said pairs disposed in parallel relation

across said source, the output node of one of said pairs being coupled to one end of said primary winding and the output node of the other of said pairs coupled to the other end of said primary winding, each switching element having a control input coupled to said switching element controller, said switching element controller adapted to produce respective switching element control signals at said control inputs so as to alternately invert the voltage from said DC voltage source across said primary winding.

62 (newly presented). The power converter of claim 61, wherein said switching elements are MOSFETS each having respectively a source, a drain, and a gate, wherein said output nodes define respective connections between the source of one of said MOSFETs and the drain of another of said MOSFETs, and wherein said gates correspond respectively to said control inputs.

63 (newly presented). The power converter of claim 62, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a constant frequency mode of operation by varying the duration of said positive and negative ON times, for varying the power transferred through said transformer.

64 (newly presented). The power converter of claim 62, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a variable frequency mode of operation by varying said dead time, for varying the power transferred through said transformer.

65 (newly presented). The power converter of claim 64, wherein said source controller is adapted to cause said dead time to be at least as long in duration as at least one of said ON time and said OFF time.

66 (newly presented). The power converter of claim 58, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a constant frequency mode of operation by varying the duration of said positive and negative ON times, for varying the power transferred through said transformer.

67 (newly presented). The power converter of claim 58, further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time, wherein said source controller is adapted to vary the duty cycle in a variable frequency mode of operation by varying said dead time, for varying the power transferred through said transformer.

68 (newly presented). The power converter of claim 67, wherein said source controller is adapted to cause said dead time to be at least as long in duration as at least one of said ON time and said OFF time.

69 (newly presented). A method for converting power in a power converter that includes a transformer having a primary winding and a secondary winding, a source connected to said primary winding and adapted to produce alternating electrical current in said secondary winding, a rectifier circuit for receiving and rectifying said alternating electrical current, and at least one soft transition inductor, the method comprising the step of controlling said source in a discontinuous conduction mode of operation of the power converter to produce said alternating current by alternating the voltage across said secondary winding so that said voltage is one of being in a negative ON condition and a positive ON condition during a first active time and said voltage is the other of said negative ON condition and said positive ON condition during a

second active time so that substantially all of the energy stored in said at least one soft transition inductor during said first active time is transferred to said power output prior to said second active time.

70 (newly presented). The method of claim 69, wherein said step of controlling said source in said discontinuous conduction mode provides a critical conduction mode of operation of the power converter by completing said transfer of substantially of all of said energy to said power output at substantially the end of said first active time.

71 (newly presented). The method of claim 70, wherein said step of controlling varies the frequency of at least one of said first and second active times as a function of the amount of power consumed at said power output.

72 (newly presented). The method of claim 71, wherein said step of controlling includes varying the frequency of at least one of said first and second active times by providing a dead time between said first and second active times during which said voltage is substantially zero and varying the duration of said dead time.

73 (newly presented). A method for converting power in a power converter that includes a transformer having a primary winding and a secondary winding, a source connected to said primary winding and adapted to produce alternating electrical current in said secondary winding, a rectifier circuit for receiving and rectifying said alternating electrical current, and at least one

soft transition inductor, the method comprising the step of controlling said source in a continuous conduction mode of operation of the power converter to produce said alternating current by alternating the voltage across said secondary winding so that said voltage is one of being in a negative ON condition and a positive ON condition during a first active time and said voltage is the other of said negative ON condition and said positive ON condition during a second active time so that a substantial amount of energy stored in said soft transition inductor during said first active time is transferred to said primary winding prior to said second active time.